Massachusetts Habitat Conservation Plan for Piping Plover

Request for Certificate of Inclusion

Prepared for submission to:

Massachusetts Division of Fisheries & Wildlife
Natural Heritage & Endangered Species Program
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Part 1 - Site Description

1.1 Physical Description of the Property

Plymouth Long Beach is a barrier spit located in Plymouth, Massachusetts. It joins the mainland at Warrens Cove, and trends in a north-westerly direction for approximately 2.8 miles. Long Beach provides storm damage protection and flood control for Plymouth Harbor. Prominent features and landmarks are shown in the map in Figure 1-1.

The Plymouth Long Beach Management Plan is implemented to protect nesting coastal waterbirds and their habitat as well as wetland resources while providing opportunities for recreational activities. Management zones described in the Plymouth Long Beach Management Plan are shown in Figure 1-1.

There is a long history of shoreline management at Long Beach dating back to the early to mid- 1800's, with the most significant effort being the stone dike constructed by the Army Corps of Engineers in the early 1900's. The stone dike runs from Manter's Point at the northern end of the main public parking lot, where it ties in with a concrete seawall added later, to the point of the barrier spit. The scouring effect typically seen with hard coastal structures is evident on the southern portion of the beach, and there is no beach seaward of the dike at high tide for approximately 7,000ft beginning near Manter's Point.

The southernmost portion of the stone dike, 5,000ft in length, was rebuilt by the Army Corps of Engineers in 1971 and included the addition of scour aprons. A portion approximately 2,500ft in length located just north of the reconstructed portion has completely deteriorated. This section begins at a parking area known as the Day Parking Area and runs northward to the over-sand vehicle (OSV) beach access point known as the Crossover. From the Crossover northward, the stone dike is covered by dunes over most of its length.

The northern part of the beach receives some protection from storms from the northeast and east by an offshore bank known as Brown's Bank as well as by Duxbury Beach, Gurnet and Saquish. The dune system is well-developed in this area, however, the point of the beach has seen significant erosion during severe storms during the last several years. The southern portion of the beach does not have the benefit of offshore protection, and bears the full brunt of storms from the northeast and east. Much of the dunes and vegetation in these areas have been reduced by erosion.

While about 90% of Plymouth Long Beach is owned by the Town of Plymouth, there are also 19 private properties and 2 properties leased from the Town. A map of private and Town properties is shown in Figure 1-2. There are cottages on 17 of these properties. There is an approximately two mile long gravel road known as Ryder Way that provides year-round access to these properties as well as public access for recreational areas.

Figure 1-1. Plymouth Long Beach Landmarks and Management Zones

Figure 1-2. Plymouth Long Beach Property Ownership

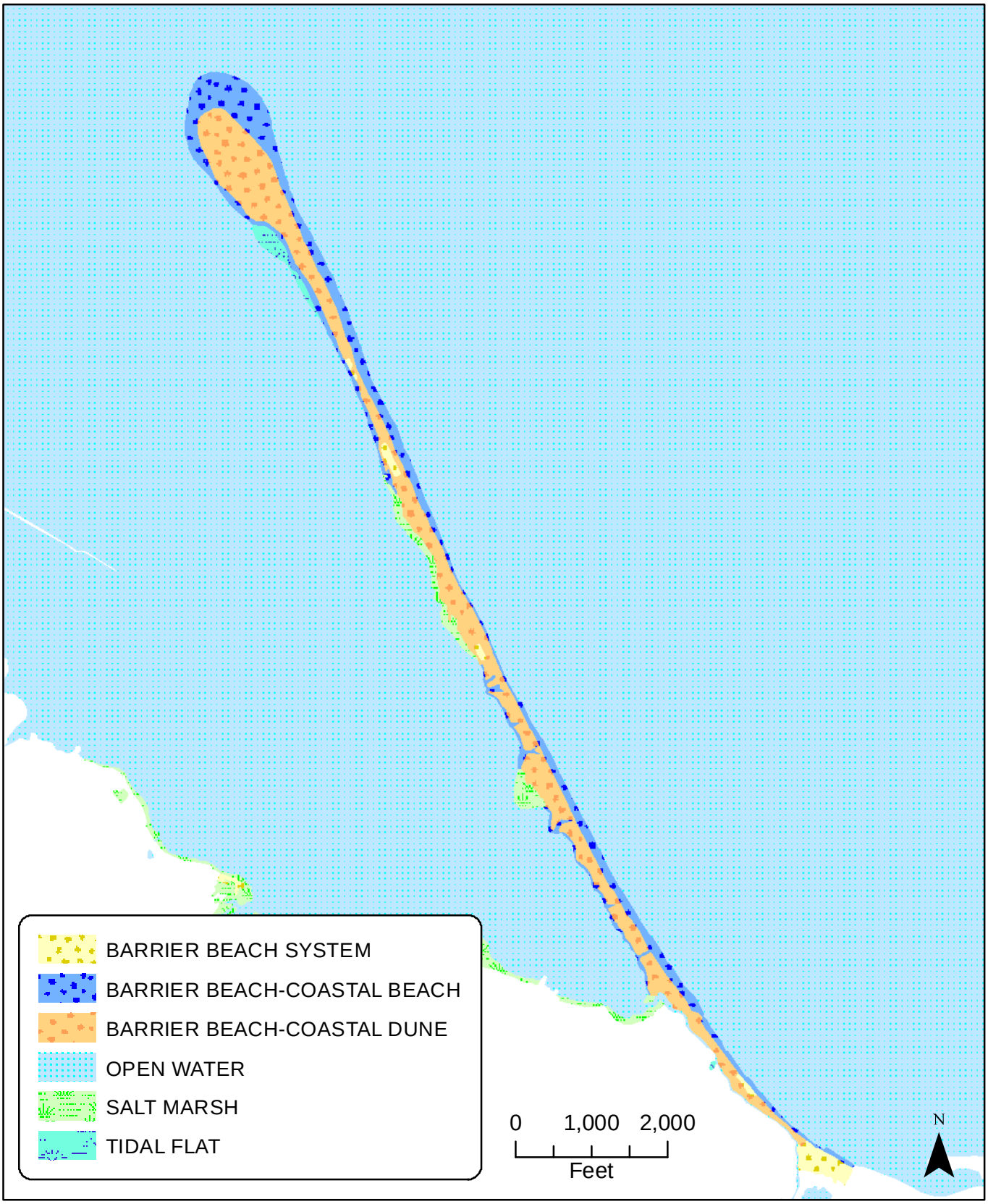
In addition to Ryder Way, recreational vehicles can access the beach using an OSV corridor that is installed seasonally, typically from Memorial Day weekend to Labor Day, in Zone 2 (see Figure 1-1). The OSV corridor begins at the Crossover and extends approximately one mile north-westward to the "790 line". Access to the OSV corridor may be partially or fully restricted due to tidal closures and restrictions for coastal waterbird nesting.

Wetland resource areas located on Long Beach, as shown in Figure 1-3, include Barrier Beach, Coastal Beach, Coastal Dune, Salt Marsh, and Tidal Flats. Other resource areas not shown on the map include Land Containing Shellfish, Rare Species Habitat, Land Subject To Flooding, and Land Under Water Bodies and Waterways.

Plymouth Long Beach is located entirely within Estimated Habitat of Rare Wildlife and Priority Habitat of Rare Species. Long Beach is a significant nesting area for several protected species, including piping plovers, least terns and common terns. Arctic terns and roseate terns also nest there in some seasons. Nesting species that do not have a state or federal endangered species designation include black skimmers and a large colony of laughing gulls. Long Beach also serves as an important staging area for migratory shorebirds, including the red knot, which was recently listed as threatened under the federal Endangered Species Act. Checklists reported to ebird.org over the last several years generally include sightings of 1 to 4 Red Knots observed, but there are occasional reports of as many as 14 (9/11/14) or 20 (9/7/14) Red Knots observed.

Over the last five years, the number of breeding pairs of least terns has ranged from 20 to 225. Because least terns often nest in areas similar to piping plovers, the covered activities in this plan may impact least terns in some cases. Least terns are discussed in further detail in section 1.3. The number of breeding pairs of common terns has ranged from 663 to 2,686 over the last five years, although in some years, the colony has hosted over 4,000 pairs. The common terns nest in a large colony at the point in Zone 3, and are unlikely to be impacted by the covered activities in this plan. Arctic terns and roseate terns typically nest in association with common terns and are also unlikely to be impacted by the activities covered in this plan.

Figure 1-3. Plymouth Long Beach Wetland Resource Areas (MassGIS DEP Wetlands Jan 2009)

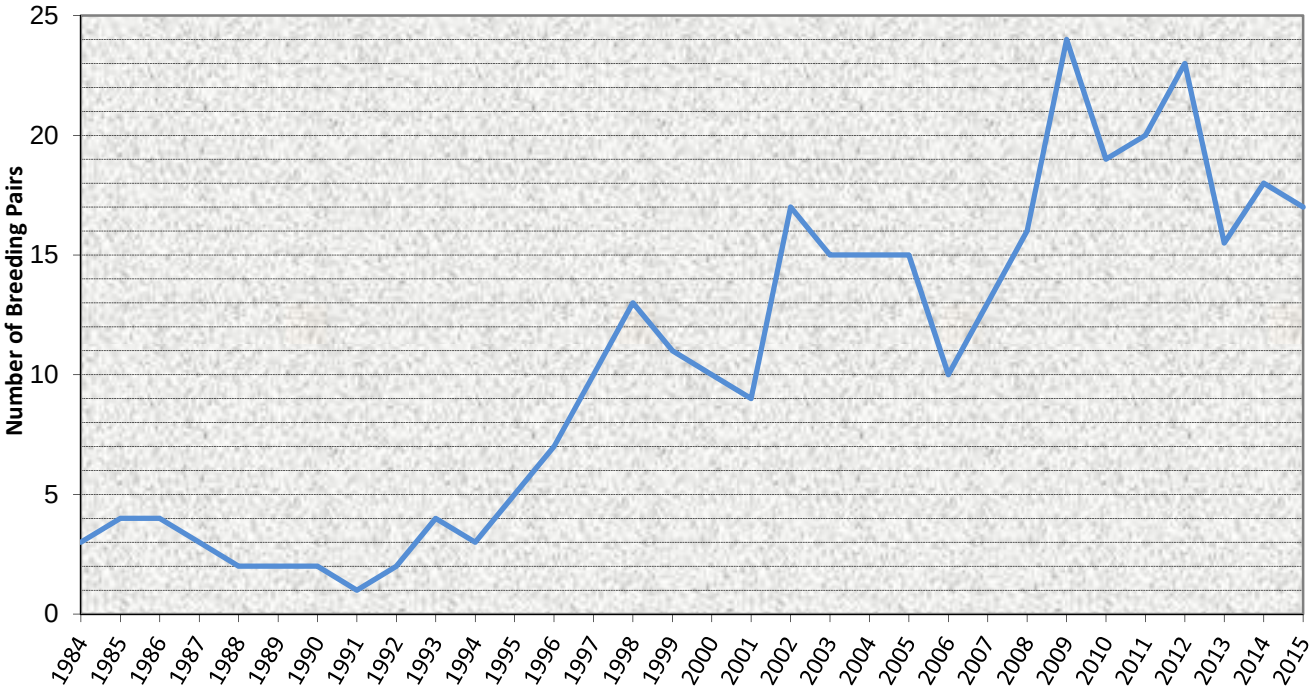


1.2 Piping Plover Habitat and History of Nesting Population and Management

Plymouth Long Beach is located entirely within estimated and priority habitat of piping plovers. While the whole beach is potential habitat, historically, piping plover nesting has been limited to the northern areas of the beach. The majority of piping plover nests are located on the beach and within the dune system in the areas north of the Crossover. The locations of nests from 2011 to 2015 are shown in Figure 1-5.

Between 1984 and 2015, the population of breeding piping plovers at Plymouth Long Beach ranged from a low of 1 pair (1991) to a high of 24 pairs (2009). The number of breeding pairs per season from 1984 through 2015 is shown in Figure 1-4. The average number of breeding pairs over the last 5 years between 2011 and 2015 was 18.7 pairs (range 15.5 to 23). In 2015, 17 pairs of piping plovers nested at Plymouth Long Beach.

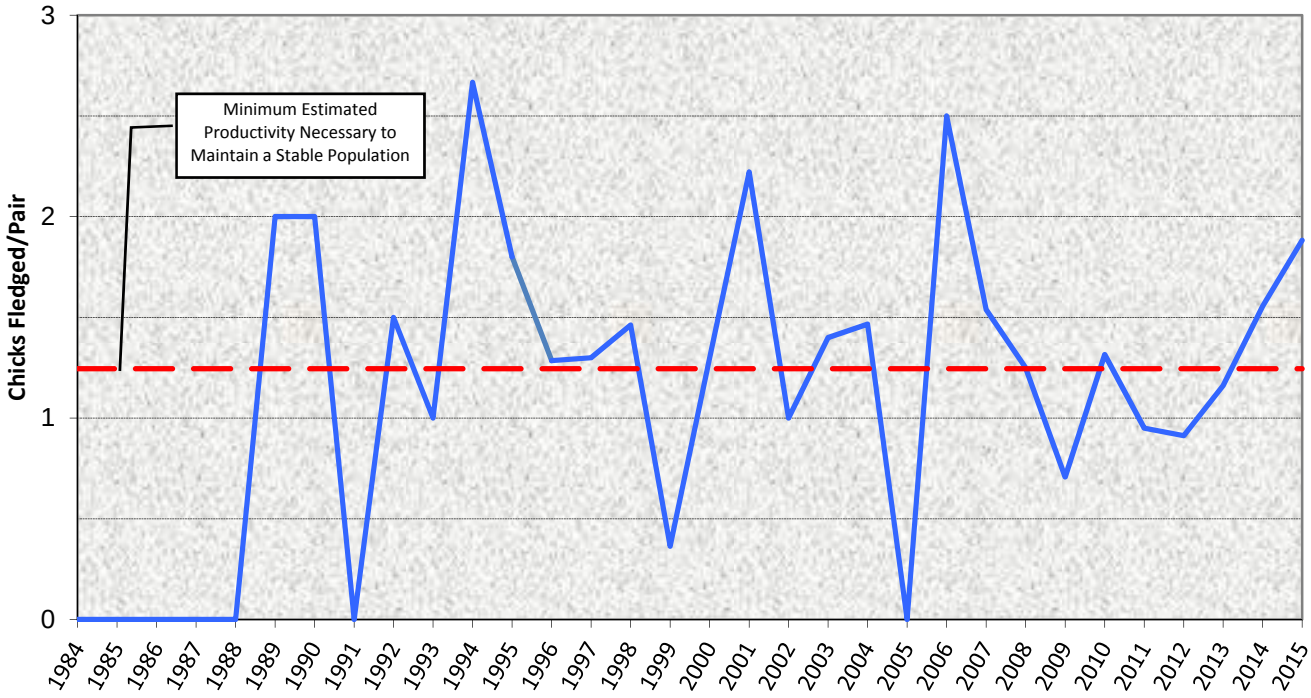
Figure 1-4. Breeding Pairs of Piping Plovers at Plymouth Long Beach, 1984-2015



Reproductive success has fluctuated from season to season because of several different factors. The Plymouth Long Beach Management Plan has been effective at limiting impacts by recreational activities, however, the effects of tides, weather and predation vary from season to season. Over the last five years, productivity has ranged from 0.91 to 1.88 chicks fledged per pair. Annual productivity since 1984 is shown in Figure 1-6. Loss of nests as a result of flooding from storm-driven high tides and chick loss as a result of weather conditions such as heavy rain and extreme heat or cold can significantly decrease productivity. These impacts vary unpredictably from season to season.

Figure 1-5. Plymouth Long Beach Piping Plover Nests, 2011-2015

Figure 1-6. Productivity (Chicks Fledged Per Pair) at Plymouth Long Beach, 1984-2015



Predation can severely impact reproductive success. In fact, in 2005, nest predation by red fox was so severe that no eggs hatched, resulting in no plover or tern chicks being produced that year. Predator management has been shown to be an effective tool to increase productivity. Table 1-1 compares productivity between seasons with and without predator management. In years with predator management, there is an average of 0.38 more chicks fledged per pair than in years without predator management. Although there is variation in productivity between seasons, implementation of predator management has on average increased the level of productivity at Plymouth Long Beach above the level of 1.24 chicks fledged per pair estimated to be necessary to sustain Massachusetts' population of piping plovers (Melvin and Gibbs 1996).

Table 1-1. Comparison of piping plover productivity (chicks fledged per pair) at Plymouth Long Beach, Massachusetts, in years with and without mammalian predator removal, 1999-2015

Year	Predator removal	Mean (range) chicks fledged per pair	Mean (range) pairs
1999-2005, 2012-2013	No	1.08 (0.0 - 1.5)	15 (10 - 23)
2006-2011, 2014-2015	Yes	1.46 (0.7 - 2.5) [a]	18 (10 - 24)

[a] Relatively low productivity in 2009 (0.71) and 2011 (0.95), both of which were years when predators were removed, was due in part to nest losses caused by flooding from storm-driven high tides.

The Plymouth Long Beach Management Plan requires a vehicle-free buffer zone to be implemented following hatching of a piping plover nest. See section 3.1 for more details about the management plan. Because there is only one Crossover at Plymouth Long Beach, the vehicle free buffer-zone results in vehicles being allowed to use the OSV corridor only up to the buffer-zone for the southernmost hatched nest. There are also other factors that may restrict use of the OSV corridor or parking areas that are described in section 3.1. Depending on the location of plover nests, significant portions of the OSV corridor, or often the entire OSV corridor may be closed to vehicles while unfledged chicks are present.

Beginning in 2009, and in most years since then, a pair of plovers has nested in an area between Ryder Way and the stone dike just south of the Crossover. When the nest in this location hatches, a vehicle-free buffer zone is implemented for that portion of Ryder Way. Recreational vehicle access is restricted to the Day Parking Area and areas southward (see Figure 1-1). Essential vehicles, including the owners, guests and renters for up to 18 properties, are escorted by Natural Resources staff through the vehicle-free buffer zone. Impacts to least terns that also nest in this area are discussed in section 1.3. In 2015, for the first time, the plovers that nested in this location moved their chicks southward to the Day Parking Area, crossed to the harborside, and moved southward along the harborside (see Figure 4-1). The brood remained in this location until the last surviving chick is suspected to have been depredated. Essential vehicles were escorted through the vehicle-free buffer zone and recreational vehicle access was limited to the area just north of the Fishermen's Turnaround (see Figure 1-1) and the areas southward. This southern movement may continue in future seasons, leading to significant restrictions for recreational vehicles along Ryder Way, even when recreational areas northward may otherwise be available.

1.3 Least Terns and Other State-Listed Species

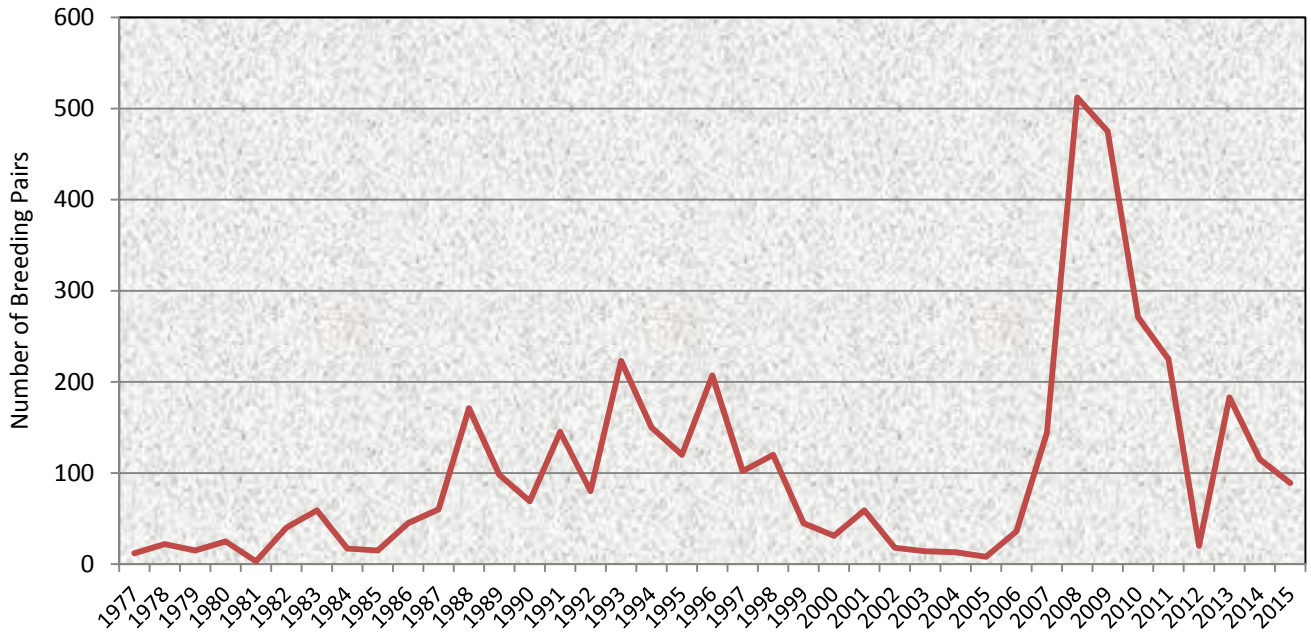
Other species protected under the Massachusetts Endangered Species Act at Plymouth Long Beach include the least tern, common tern, arctic tern, and roseate tern, which is also federally listed. Because vehicle activity is limited to Zones 1 and 2 during the nesting season, the colony of common terns located at the point in Zone 3 (see Figure 1-1) is not likely to be affected by the activities covered in this plan. Arctic terns and roseate terns typically nest in association with common terns, and they

also will not likely be affected. Least terns, however, nest in similar habitats as piping plovers, so the covered activities are more likely to affect them.

Least terns prefer a sandy or gravelly substrate and typically nest on the coastal beach and sometimes in dune blowouts. At Plymouth Long Beach, least tern nests can be found from the area just south of the Crossover between Ryder Way and the stone dike and along the beach from the Crossover to the "790 line" and sometimes beyond. Figure 1-8 shows the areas used by least terns during the last five years.

Records dating back to 1977 show that the population of least terns at Plymouth Long Beach has varied widely with a low of 3 pairs in 1981 to a high of 512 pairs in 2008 (see Figure 1-7). Over the last five years, the number of breeding pairs of least terns has ranged from 20 to 225. Productivity has also varied widely as a result of factors including predation and weather.

Figure 1-7. Breeding Pairs of Least Terns at Plymouth Long Beach, 1997-2015



Least terns' preference for habitat similar to that of piping plovers may cause them to be impacted by activities covered by this plan, particularly in the area located just south of the Crossover between Ryder Way and the stone dike. Piping plovers began nesting in this location in 2009, however, least terns had been nesting there for many years. At that time a vegetative border between the nesting area and Ryder Way provided a geographical barrier that prevented tern chicks from entering the road. When a piping plover nest in this area hatches, the vehicle-free buffer zone is implemented. Essential vehicles, including the owners, guests and renters for 18 properties are escorted through the buffer zone by the Natural Resources staff. During essential vehicle escorts, the staff walks in front of the vehicles. Vehicles driving by the nesting area have not been observed to affect least terns, however, pedestrian activity, including vehicle escorts, disturbs the adult least terns, causing them to flush from the colony, which can negatively affect hatching success and chick survival.

Figure 1-8. Compilation of Nesting Areas Used By Least Terns at Plymouth Long Beach, 2011-2015

A large portion of the vegetative border was washed out during the February 2013 blizzard and subsequent nor'easter. More of the vegetative border was washed out during the blizzards and severe storms in January-March 2015. Since 2013, with the approval of MADFW, a silt fence barrier has been installed to prevent least tern chicks from entering the road. The tern chicks have access to wet sand, open beach, the stone dike, and the boulders delineating the edge of the road. In addition, the Natural Resources staff places at least one shade structure per nest to provide cover and shade for the unfledged tern chicks. Shade structures may include sections of PVC pipe, tepee style wooden shelters, roseate tern nest boxes, wooden pallets, cinderblocks, and plywood propped up on rocks or cinderblocks. The silt fence is checked several times per day, and Natural Resources staff records the number of chicks, their approximate age and their location periodically throughout the day. If any negative impacts from the fence were to be observed, the fence would be removed immediately and essential vehicle escorts would begin.

The silt fence barrier has allowed the negative impacts of essential vehicle escorts for the terns to be avoided, however, installation has been delayed until the piping plover chicks either fledge or leave the area. Implementation of the covered activity "Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks" (section 4.1) would allow installation of the barrier while unfledged piping plover chicks are present, which would further reduce pedestrian impacts to the least tern colony.

Part 2 - Responsible Staff

The Plymouth Department of Marine and Environmental Affairs is responsible for preparation, implementation, and updates of the IAMP. Key staff includes David Gould and Kerin McCall.

David Gould is the Director of Marine and Environmental Affairs. He has been overseeing implementation of the Plymouth Long Beach Management Plan since 2002. He served as the full-time Natural Resources Officer responsible for management of Long Beach from 2002 to 2004. Since 2005, he has supervised the Environmental Technician responsible for day to day management of Long Beach. More information on his background is included in Appendix A.

Kerin McCall has been the Environmental Technician responsible for implementing the Plymouth Long Beach Management Plan since 2005. Prior to that, she was a seasonal Natural Resources Officer at Plymouth Long Beach during the 2003 and 2004 seasons and worked in the Resource Management Department at Gulf Islands National Seashore from 1999 to 2002. She has been monitoring and managing nesting activity of plovers and terns since 1999. She began working with least terns in 1999 and with piping plovers in 2003. More information on her background is included in Appendix A.

Ms. McCall has primary responsible for preparing, implementing and updating the plan in consultation with Mr. Gould.

Part 3 - Beach Management Plan

Plymouth Long Beach is managed in compliance with the 2008 Plymouth Long Beach Management Plan as conditioned by the Corrected Amended Final Order of Conditions issued by the Massachusetts Department of Environmental Protection in 2014 and the Conditional No Take determination issued by the Division of Fisheries and Wildlife in 2010. The management plan was implemented to protect wetland resources and rare species and their habitats as well as to manage recreational activities. The management plan divides Long Beach into four management zones based on the resources located within each zone (Figure 1-1).

3.1 Recreational Activities

Permitted recreational activities vary between management zones and some are limited to certain times of year to protect the natural resources located in each zone.

Non-motorized Recreational Uses

Non-motorized recreational uses include activities such as walking, jogging, sunbathing, swimming, picnicking, bird watching, recreational finfishing, recreational shellfishing, dog walking and kite flying.

To prevent impacts by beachgoers engaged in these activities, symbolic fencing and signage are installed to protect nesting habitat of plovers and terns. Symbolic fencing is adjusted as needed so that a pedestrian-free buffer zone at least 50 meters in radius is implemented around each nest above the high tide line. The buffer zone may be increased to more than 50 meters if incubating plovers are disturbed. In limited cases, the symbolic fencing may be moved up to 12ft above the mean high tide line resulting in the buffer zone being reduced to less than 50 meters if the Environmental Technician determines that the incubating plovers and/or terns are not exhibiting signs of disturbance. The management plan requires that symbolic fencing be left in place from April 1 through September 30.

The conditional “no take” determination issued by the Massachusetts Division of Fisheries and Wildlife in 2010 instituted a seasonal partial ban on dogs. Leashed dogs are allowed in all zones between October 1 and March 30. Between April 1 and September 30, dogs are banned from Zones 2, 3, 4, and the areas of Zone 1 north of the Day Parking Area. Leashed dogs are allowed in other areas of Zone 1 during this time period.

Kite flying is prohibited in Zones 3 and 4 from April 1 to September 15 and prohibited within 200 yards of nesting plovers and terns (adults and chicks) in Zones 1 and 2.

Motor Vehicle Management

Protection of Nests

All suitable habitat is identified by a qualified biologist and delineated with symbolic fencing and signage before April 1 (or May 15 for terns) of each year. Pedestrian and vehicular access is prohibited. Before the beachfront opens for vehicles, typically on Memorial Day weekend, an Over-Sand Vehicle (OSV) corridor is installed. The location of the OSV corridor must be reviewed and adjusted a minimum of two additional times, once in July and once in August. OSV use is limited to Zone 2. The corridor is installed beginning at the Crossover and may extend to the “790 line”. Wooden posts and signage delineate the OSV corridor. The seaward edge of the corridor is installed at the mean high tide line.

The corridor may be up to 42ft in width, including 12ft for travel in each direction and 18ft for parking, where sufficient width exists. The corridor may be narrowed for several reasons, including plover or tern nesting activity, protection of vegetation, and passage over private property. In limited cases, when the OSV corridor would infringe on the 50 meter-radius nest buffer zone, a 12ft wide OSV corridor may be installed provided that the Environmental Technician determines that the incubating plovers and/or terns are not exhibiting signs of disturbance. If the plovers and/or terns exhibit signs of disturbance, the OSV corridor is eliminated and the symbolic fencing is moved out to the mean high tide line. Symbolic fencing is installed at the landward edge of the OSV corridor.

After the OSV corridor is established, the Crossover gate is only open between 9:00am and 7:00pm and only when the minimum staffing level of three or four staff, depending on how much of the corridor is open, has been met as required in the management plan. One of the required staff members must be either the Environmental Technician or a Natural Resources Officer.

Protection of Chicks

To allow sufficient wrack to accumulate to provide an adequate food source for plover chicks, a pre-hatch restriction is implemented not less than five days prior to the anticipated hatching date. The OSV corridor is closed 100 yards north and south of the nest. If the nest is found with a complete clutch, precluding estimation of the hatching date and availability of wrack has been substantially reduced or ruts have been created that could impede chick movements, then vehicle restrictions begin immediately. If wrack has not been substantially reduced and ruts will not impede chick movement, restrictions will begin when the nest hatches. In addition, the three scenarios described in the state and federal guidelines for nests with unknown hatching dates are included in the management plan.

Nests located north of the Crossover, including those with unknown hatch dates, are monitored at least once per day, and the OSV corridor closes at 7:00pm and is not re-opened the next day until nests with unknown hatch dates have been checked and the southernmost brood of chicks has been located. Nests with unknown hatch dates and nests approaching a known hatch date located south of the Crossover are monitored at least twice per day in the morning and evening.

If hatching occurs earlier than expected, or chicks are discovered from an unreported nest, vehicle restrictions are implemented immediately.

When a nest hatches, a vehicle-free buffer zone is implemented. For piping plovers, the buffer zone is a minimum of 200 yards on either side of the nest during the first week. The buffer zone may be reduced to 100 yards after the first week until fledging. The location of the brood is monitored and the buffer zone is increased as needed based on the mobility of the chicks so the buffer zone between vehicles and unfledged chicks is at least 100 yards. For least terns, a 100 yard buffer zone is implemented. The location of each brood is monitored daily, and a Natural Resources staff person is stationed at the vehicle restriction while the OSV corridor is open to monitor proximity of the southernmost brood to the vehicle area and also to prevent vehicles from driving into the buffer zone. Vehicle restrictions are lifted when plover chicks are 35 days of age or when observed in sustained flight for at least 15 meters, whichever occurs first.

Vehicle restrictions for least terns begin as soon as hatching begins (as early as June 12th). Restrictions may be later if, in the opinion of the Environmental Technician, tern chicks are not endangered by vehicles because of distance or intervening steep terrain, dense vegetation or other naturally occurring

barriers. Restrictions on use of non-essential vehicles in areas where unfledged least tern chicks are present should continue until chicks have fledged. Least tern chicks are considered fledged when they are capable of flight.

Essential Vehicles

As stated in the Plymouth Long Beach Management Plan, essential vehicles are limited to vehicles necessary for police, fire and EMS service, Natural Resources vehicles, and vehicles necessary to maintain and access private property. All other vehicles are considered non-essential and are prohibited from chick habitat areas. Essential vehicles should travel through chick habitat areas only during daylight hours, except emergencies, and should be guided by a qualified monitor who has first determined the location of all unfledged plover and tern chicks. The speed of vehicles will not exceed five miles per hour. Foot travel is preferred for monitoring and law enforcement because of the improved visibility it affords. A log of the date, time, vehicle number and operator and purpose of each trip through areas where unfledged chicks are present will be maintained by the Natural Resources Officer. Personnel monitoring plovers will maintain and regularly update the log of the numbers and locations of unfledged plover chicks on the beach. Essential vehicles will avoid driving on the wrack line and travel will be infrequent enough to avoid creating deep ruts that could impede chick movements. If essential vehicles are creating ruts that could impede chick movements, use of essential vehicles will be further reduced, and if necessary, restricted to emergency vehicles only.

3.2 Parking and Roads

Ryder Way is an improved and maintained gravel road. Grading is used only for the Main Beach Parking Lot and Ryder Way. Compatible grain-size sediments may be brought in from off-site to repair the road and parking area as necessary.

Parking is allowed in designated areas only. A maximum of 225 vehicles is allowed north of Manter's Point at any one time. Parking on the beachfront is described above in section 3.1. Parking north of Manter's Point along Ryder Way and in the Day Parking Area is limited to the areas identified in the Parking Plan included in the management plan.

3.3 Beach Cleaning and Refuse Management

Land- and marine-source trash and debris is removed from all zones by hand on a routine basis during the summer season. The Environmental Technician coordinates removal in dune areas and rare-species habitat to minimize impacts.

Trash barrels in the Main Beach Parking Lot are emptied on a daily basis. There are no trash barrels north of Manter's Point. Beach visitors bring trash with them when they leave the beach.

Wrack is not removed from the beach because of its habitat value, however, limited removal from the Main Beach Area is approved for esthetic reasons. In addition, if excessive amounts of seaweed are deposited in an area where a health or safety hazard is a concern as determined by public health officials then it may be necessary to remove the wrack.

3.4 Rules and Regulations

In addition to the management plan, Plymouth Bylaws Chapter 30 – Beaches and Parks also regulates activities at Plymouth Long Beach. The sections of Chapter 30 that are applicable to Plymouth Long Beach address issues such as required permits, prohibited vehicles such as motorcycles and ATVs, domestic animals, closure of dunes and vegetated areas to vehicles and pedestrians, dumping and littering, restricted areas for vehicles, parking on private property, speed limit, four wheel drive vehicles only, camping, glass containers, use of grills, open fires, liability, stuck vehicles, riding on the outside of vehicles, authority to limit number of vehicles, keeping the right-of-way open, firearms, closing hours of the road and parking lot, and blocking traffic.

3.5 Law Enforcement

The initial approach of the Natural Resources staff to enforcing rules and regulations is educational, but it is sometimes necessary to issue warnings and citations for severe violations, failure to comply, and repeated offenses. The Plymouth Long Beach Enforcement Regulations were adopted by the Board of Selectmen on June 8, 2004. A fine schedule for violations of the Plymouth Long Beach Management Plan was adopted at Town Meeting on October 26, 2004.

The Environmental Technician, the two Natural Resources Officers, and several of the Natural Resources Technicians and Assistants have the authority to issue citations for violations of the management plan and Chapter 30 bylaws. In addition, the Natural Resources Wardens are available to assist with enforcing rules and regulations. Animal Control Officers and Natural Resources Wardens are available to assist with dog violations. The Harbormaster is available to provide enforcement assistance with boaters.

The Plymouth Police Department provides a dedicated patrol officer from 4:00pm to 12:00am on Friday, Saturday and Sunday nights as required by the management plan. In addition, officers patrol the parks and beaches periodically during the week.

3.6 Other Operations

Other operations such as fireworks are not specifically addressed in the management plan, but standard practices for July 4th have been in place since 1999 that protect plovers and terns from the impacts of fireworks and associated activities. The Town's fireworks display is launched from a barge in Plymouth Harbor approximately 3/4 mile from the beach. In order to prevent beachgoers from entering nesting areas or lighting illegal personal fireworks on the beach and other potentially disturbing activities, the OSV corridor and Ryder Way close to recreational vehicles by 7:00pm. In addition, all boaters must leave the beach by 7:00pm. An exception was made to the road closure in 2012 when a portion of Ryder Way was made available for vehicle parking to view fireworks, but this was not continued because of low use. The Main Beach Parking Lot is available for fireworks spectators and is located over 1 mile from plover and least tern nesting areas. The 7:00pm closure does not apply to private property owners and their guests, as long as all vehicles are parked on private property. Staffing levels are increased for the holiday and staff members are assigned to patrol areas along the length of the beach to be vigilant for illegal fireworks and other potentially disturbing behavior.

In the past, the Town has been rarely approached about holding public events at Plymouth Long Beach. In general, the level of recreational activity and restrictions for coastal waterbird nesting activity preclude public events from occurring at Long Beach. On a few occasions in the past, foot races have been held on either Ryder Way or the beachfront. Planning of these events is coordinated with the Department of Marine and Environmental Affairs (DMEA). Although public events are not specifically addressed in the management plan, DMEA has worked with the organizers to avoid impacts to nesting plovers and terns by putting restrictions on the event including location and time of year.

3.7 Plover and Tern Monitoring and Management

All suitable plover nesting habitat is delineated with symbolic fencing and signage by April 1 of each year. The location of the symbolic fencing is reviewed weekly and adjusted as the beach gains its wider summer profile. Symbolic fencing and signage are installed for tern habitat by May 15 of each year.

When deemed necessary due to the level of predation occurring, predator-deterrent exclosures are installed at piping plover nests. Each nest is evaluated for several factors including topography, substrate and density of vegetation around the nest, to ensure that installation of an exclosure is appropriate for that site.

Predator management has been conducted in some years when outside funding has been available to reduce predation by mammalian predators, primarily red fox and Eastern coyote, and crows.

Monitoring is carried out by the Environmental Technician, Natural Resources Officers, Natural Resources Technicians, and Natural Resources Assistants that have been cross-trained to assist with monitoring activities.

Typically, plover nesting activity is monitored approximately 3 times per week in early to mid-April and increases to 5-7 times per week in late April or early May. When the OSV corridor opens for the season on Memorial Day weekend, nesting activity is monitored daily through the end of the nesting season. Each monitor has a field book in which all activity is recorded. Each nest has a log sheet that is filled out daily where information such as clutch size, adult behavior, exclosure use, expected hatch date, hatching, and brood location are recorded. Nest sheets are reviewed before monitoring begins.

Piping plover nesting data is compiled and submitted to the Massachusetts Division of Fisheries and Wildlife's Natural Heritage and Endangered Species Program using the Massachusetts piping plover census form.

Least tern nesting activity is monitored by counting nests several times during the tern census windows. Least tern chicks are monitored from outside the colony, and location and approximate age are recorded. The highest count for each census window is reported on the Massachusetts tern census form along with an estimate of productivity and submitted to the Natural Heritage and Endangered Species Program.

The Environmental Technician, two seasonal Natural Resources Officers and three Natural Resources Technicians conduct monitoring. Minimum qualifications as stated in the management plan for Natural Resources Officers include actively pursuing a Bachelor's Degree in natural resource management, environmental sciences or related field; one to three years of experience in natural resource management and progressive supervisory experience; or an equivalent combination of education and experience. Minimum qualifications for Natural Resources Technician include a high

school diploma and one to two years of experience in natural science application or participation. All Natural Resources Officers and Technicians receive training from the Environmental Technician regarding plover and tern biology and behavior, monitoring procedures, and data collection. Natural Resources Assistants that show interest in coastal waterbird monitoring are cross-trained to assist experienced monitors.

Part 4 - Covered Activities

The Town of Plymouth is requesting to implement the covered activity “Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks" that may impact up to two (2) broods of piping plover chicks (an estimated 11.7% of onsite breeding pairs based on 2015 plover census). The area that will be affected by this covered activity will vary between seasons based on nest location and brood behavior. If this covered activity had been implemented for the 2015 season, which involved a brood that moved over 700 yards from its nest site to its foraging area, the activity would have taken place over approximately 1.89 acres. During the 2014 season, in which the brood remained within its original vehicle-free zone that was 200 yards wide on either side of the nest, the activity would have taken place over approximately 0.55 acres.

4.1 Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks

Ryder Way is an improved gravel road that provides year-round access to recreational areas as well as access for 21 private properties, including 17 residences. The road is maintained through grading and repaired by adding compatible material when necessary. Nearly every year since 2009, a piping plover pair has nested in an area south of the Crossover between the stone dike and Ryder Way. Because there is no impact to wrack or ruts made on the beach, vehicle restrictions have been implemented for Ryder Way when the nest hatches. Recreational vehicles are limited to at least 200 yards southward during the first week after hatching and at least 100 yards southward thereafter until the chicks fledge. Essential vehicles, including those of the owners, guests and renters of up to 18 private properties are escorted through these areas by the Natural Resources staff. In most seasons, vehicles must be escorted past the least tern nesting area adjacent to Ryder Way, which flushes adults from nests and causes nests and chicks to become more vulnerable during each escort, many times per day. Although property owners are told to limit travel to daylight hours, they sometimes insist on travelling through the area at night when chicks are more difficult to observe, which increases the risk of a take occurring. There are sometimes recreational areas that would otherwise be accessible because there is no nesting activity in the area or chicks have fledged that are closed only because of the presence of chicks near Ryder Way. The Day Parking Area, which is the preferred parking area when the beachfront areas are closed for vehicle access, is sometimes also inaccessible. Under this covered activity, the Town would provide unrestricted access for essential vehicles and access for recreational vehicles when recreational areas beyond are available subject to the impact minimization measures described below.

In no event would the Town expose more than2 broods of piping plover chicks to this covered activity, to ensure that the total number of broods exposed to covered activities did not exceed the site cap of 2 in any beach season.

Impact minimization measures

Impact minimization measures will limit the amount of take by reducing exposure of chicks and adults to vehicles travelling on Ryder Way. Impact minimization measures employed will include installation of a barrier fence, signage, staff training, and traffic management if necessary.

Barriers

If unfledged plover chicks are present in the area between Ryder Way and the stone dike between the Crossover and the Day Parking Area, a barrier may be installed to reduce risk by preventing chicks from accessing Ryder Way. The potential location for the barrier is shown in Figure 4-1. The barrier will consist of a silt fence installed along the edge of the road so that habitat areas including open beach, wet sand, the stone dike and the boulders and posts that delineate the roadway will be available for chicks. The length of barrier fence installed will vary depending on location and mobility of the chicks. The nesting habitat is very narrow in this area, particularly during high tide, and there is a chance that plover chicks may inadvertently wander into the road, even if there is no suitable habitat to access.

The southern end of the barrier fence will be left open to allow chicks to move southward to access the foraging area along the harborside across from the Day Parking Area and southward as shown in Figure 4-1. In 2015, a brood that hatched from a nest adjacent to the location of the potential barrier fence moved southward and crossed to the harborside near the Day Parking Area at the age of 2 days old. Three chicks were lost through unknown causes at 7 days old, but the last chick remained in the primary foraging area shown on Figure 4-1 until it is suspected to have been predated at 19 days old.

The northern end of the barrier fence may tie into the existing dunes and vegetation to prevent access to the road, but access to the beach will be unimpeded. A brood crossed the road in this area in 2014 (see Figure 4-1). The brood was on the beach east of the stone dike when the tide was coming in. There was no beach at high tide in this area, and the plovers from an adjacent territory did not allow the brood to pass by, so the adults led the chicks up a sand path created by a private property owner over the stone dike, across the road, and into the private driveway directly across from the path. Approximately 30 minutes later, the brood crossed the road again to return to the area between the road and stone dike, presumably because there was no suitable habitat on the west side of the road.

The barrier will be inspected for gaps and damage at least twice per day and repaired as necessary. The barrier will also be inspected for negative impacts to chicks. Should any negative impacts be observed for either plover or tern chicks, such as increased predation or hindering movement to foraging areas, the barrier will be removed. The potential barrier shown in Figure 4-1 is based on observations of nest locations and brood behavior from previous seasons. If these are substantially different in future seasons, the barrier may be installed in another location with written approval of MADFW.

Signage

Signage alerting drivers to watch for crossing birds will be installed along Ryder Way or the Day Parking Area at least every 100 yards beginning at least 200 yards south of and 200 yards north of the location of unfledged piping plover chicks. In addition, signs requesting that drivers alert staff if they observe piping plovers in or near the road or parking area will be installed. Additional signs stating the speed limit of 10 miles per hour will be installed in proximity to the impacted brood.

Figure 4-1. Location of Potential Barrier to Minimize Impacts of Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks

Staff Training

The Natural Resources staff will be trained to implement the impact minimization plan. The Environmental Technician will oversee implementation with assistance from two seasonal Natural Resources Officers (NROs). The Environmental Technician, NROs and three seasonal Natural Resources

Technicians (NR Technicians) are responsible for monitoring nesting activity of piping plovers, least terns, common terns, and in some years, arctic terns and roseate terns. The NROs and NR Technicians receive training from the Environmental Technician to fulfill these duties. Generally, two or more of the twelve seasonal Natural Resources Assistants (NR Assistants) are cross-trained to assist with coastal waterbird monitoring. All staff members are trained to recognize piping plover adults and chicks, understand basic piping plover biology and recognize behaviors.

In addition to this general training, each staff member will be trained to understand their respective roles and responsibilities in regards to the impact minimization plan. Periodic monitoring of the impacted brood will be conducted by an NRO, NR Technician, or cross-trained NR Assistant. NR Assistants on patrol within the covered activity area will be alert to the presence of piping plovers. Staff members that observe piping plovers near the road or parking area, or a change in the location of the impacted brood will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with push-to-talk walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information. In the event of a change of location of the impacted brood, traffic management as described below or modification of the silt fence barrier within the potential area identified in Figure 4-1 will be implemented as necessary as determined by the Environmental Technician.

Traffic Management

Should chicks be observed in the road or within 50ft of a section of the road without a barrier, the road should temporarily close until the adults and chicks have crossed the road and moved at least 50ft from the road.

Should chicks be observed in the road where a barrier is in place, the Natural Resources staff may approach the chicks to herd them toward an area without a barrier so they may access suitable habitat.

Should chicks be observed within 50 yards of the Day Parking Area, the Natural Resources staff may approach the chicks to herd them away from the parking area.

Distances that trigger traffic management may be subject to change based on the physical features of the site and behavior and mobility of the brood.

Natural Resources staff members that observe or receive reports of piping plovers near the road or parking area, or a change in the location of the impacted brood will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information.

Monitoring

To reduce the risks that chicks may cross into traffic without adequate protective measures in place, the location of the brood must be monitored. Monitoring intensity should increase with proximity to Ryder Way or the Day Parking Area. Because of the narrow width of the beach along Ryder Way, chicks will likely always be within 100 yards from the road or parking lot, and must be monitored more frequently than other broods located north of the Crossover.

Because chicks are mobile, monitoring frequency may change as the location of the brood changes. Each monitoring period will last a minimum of twenty minutes. If the chicks consistently remain within 50-100 yards of the road or parking lot, they will be monitored at least twice per day, and at least five times per day during high traffic periods. If the chicks are observed less than 50 yards from the road or parking area, they will be monitored at least four times per day, and continuously during high traffic periods. High traffic periods will include at minimum the hours between 8:30am and 10:00am, 12:30pm and 2:00pm, and 6:00pm and 7:00pm on weekends, unless traffic is expected to be reduced (e.g., adverse weather conditions). Frequency of monitoring may be increased by the Environmental Technician or Natural Resources Officer if deemed necessary. Monitoring frequency will increase to a level determined in consultation with MADFW once chicks have been observed crossing a road or parking area.

In the event of inclement weather where monitoring may adversely affect the chicks, monitoring frequency may be reduced and non-essential vehicle access will be restricted.

Monitoring the brood is difficult after sunset. To minimize the risk of take after dark, non-essential vehicle access will be restricted, however, essential vehicles may continue to travel through the area.

Monitoring will be carried out by a qualified shorebird monitor. There will be no less than one monitor per brood. Under staffing levels required by the Plymouth Long Beach Management Plan, at least two qualified shorebird monitors, and sometimes as many as six depending on the day of the week and time of day, are on duty, which will allow monitoring for both the covered activity and routine management and monitoring. Under current procedures, when unfledged chicks are present near Ryder Way, three staff members, including a qualified shorebird monitor, are dedicated to escorting essential vehicles through the area where unfledged chicks are present. Routine management and monitoring are conducted by the second shorebird monitor. Implementing this covered activity will allow these staff members to perform other duties, including those associated with this covered activity, so additional staff will not be necessary.

Shorebird monitors shall have the following minimum qualifications:

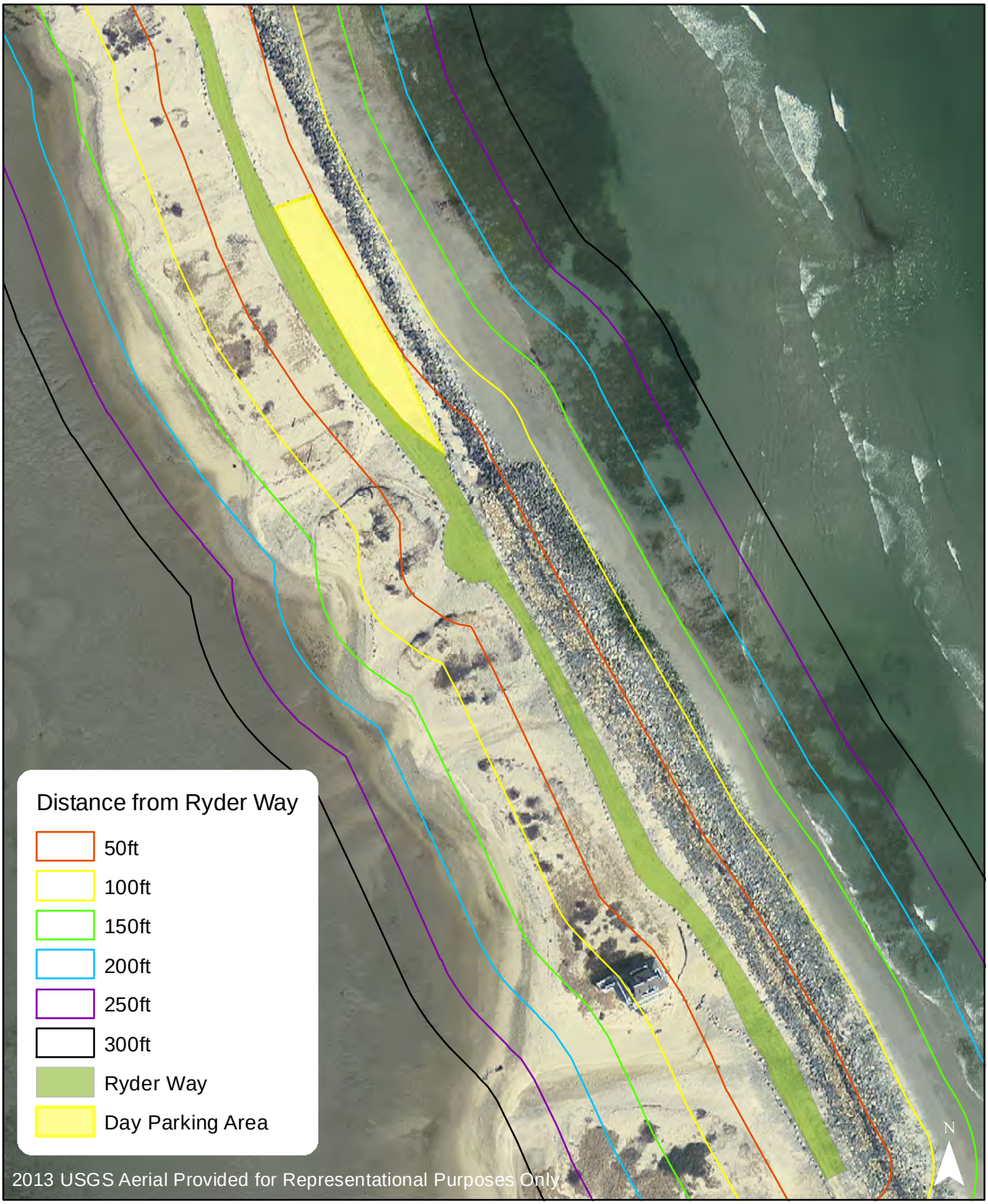
- A high school diploma or equivalent.
- Ability to gain a working knowledge of State and Federal Guidelines for the protection of piping plovers, least terns and common terns on multi-use recreational beaches.
- Good observational skills.
- Ability to perform physical labor associated with the placing of posts, signage, symbolic fencing, and protective exclosures in habitat areas.
- Ability to walk up to 5 miles per day within habitat area for survey and protection activities.
- Knowledge and experience, or willingness to obtain, with four wheel drive vehicles.

- Ability to work independently with little direct supervisory oversight.
- Strong people skills, team oriented, and ability to work in a collaborative, problem-solving approach.
- A valid Massachusetts driver's license.

Shorebird monitors should start working at least 2 weeks before the anticipated use of roads and parking lots in the vicinity of unfledged piping plover chicks to allow time for on-site training.

Monitors will keep a log documenting frequency of monitoring, location of the brood, number of chicks, approximate distance from the road or parking lot, whether a barrier was in place, and if the brood crosses the road or enters the parking lot. A datasheet will be developed to record monitoring sessions, and a map will be developed to aid in estimating distances from the road and parking lot (see Figure 4-2).

Figure 4-2. Draft of Map to Determine Distance of Brood from Ryder Way and the Day Parking Area



4.2 Use of Roads and Parking Lots in the Vicinity of Unfledged Least Tern Chicks

Use of the road and parking lot may impact least terns because they often nest in similar habitats to piping plovers. Least terns have a history of nesting in the narrow area between the Crossover and the Day Parking Area, which is located adjacent to the potential barrier fence location identified in Figure 4-1 and also shown in Figure 4-3 with a compilation of the areas used by nesting least terns over the last five years that may be impacted by this activity. During this time period, the level of use of this area has varied from season to season. The number of nesting pairs has ranged from 12 to 51 pairs of least terns.

Elimination of escorting of essential vehicles adjacent to the least tern nesting area will benefit least terns by decreasing disturbance to the colony. During essential vehicle escorts, a Natural Resources staff member walks in front of the vehicles. Vehicles driving by the nesting area have not been observed to affect least terns, however, pedestrian activity, including vehicle escorts, disturbs the adult least terns, causing them to flush from the colony, which can negatively affect hatching success and chick survival.

Impact minimization measures

Impact minimization measures will limit the amount of take by reducing exposure of unfledged least tern chicks to vehicles travelling on Ryder Way. Impact minimization measures employed will include installation of a barrier fence, installation of shade structures, signage, staff training, and traffic management if necessary.

Barriers

As described above for piping plover chicks, if unfledged least chicks are present in the area between Ryder Way and the stone dike south of the Crossover and north of the Day Parking Area, a barrier will be installed to reduce risk by preventing chicks from accessing Ryder Way. Since 2013, with the approval of MADFW, a silt fence barrier has been installed to prevent least tern chicks from entering the road. The potential location for the barrier is shown in Figure 4-1. The barrier will consist of a silt fence installed along the edge of the road so chicks are able to access open beach, wet sand, the stone dike and the boulders and posts that delineate the roadway. The actual length of barrier fence installed will vary depending on the location and mobility of the chicks.

A minimum of one shade structure per nest will be added to the area adjacent to the barrier fence to ensure that least tern chicks have access to adequate shade and cover. Shade structures may consist of lengths of PVC pipe, tepee style wooden shelters, roseate tern nest boxes, wooden pallets, cinderblocks, plywood or boards propped up on cinderblocks or rocks, or other similar structures.

The barrier will be inspected for gaps and damage at least twice per day and repaired as necessary. The barrier will also be inspected for negative impacts to chicks. Should any negative impacts be observed for either plover or tern chicks, such as increased predation or hindering movement to habitat areas, the barrier will be removed.

This plan is based on observations of nesting areas from previous seasons. If least terns begin nesting along Ryder Way in areas other than adjacent to the potential barrier shown in Figure 4-1, the barrier may be installed in another location with written approval of MADFW.

In some locations, a barrier may not be installed depending on the needs of piping plover chicks to access important foraging areas, which may increase the risk of take for unfledged least tern chicks. To reduce this risk of take, monitoring will be increased as described below and traffic management will be implemented as necessary.

Signage

Signage alerting drivers to watch for chicks in the road will be installed along Ryder Way or the Day Parking Area at least every 100 yards beginning at least 100 yards south of and 100 yards north of the location of unfledged least tern chicks. In addition, signs requesting that drivers alert staff if they observe chicks in or near the road or parking area will be installed. Additional signs stating the speed limit of 10 miles per hour will be installed in proximity to the unfledged least tern chicks.

Staff Training

Staff training will be similar to that described in Section 4.1. Each staff member will be trained to understand their respective roles and responsibilities in regards to the impact minimization plan. Periodic monitoring of the impacted chicks will be conducted by an NRO, NR Technician, or cross-trained NR Assistant. NR Assistants on patrol within the covered activity area will be alert to the presence of unfledged least tern chicks. Staff members that observe unfledged chicks near the road or parking area, or a change in the location of the impacted chicks will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with push-to-talk walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information. If necessary, traffic management as described below or modification of the silt fence barrier within the potential area identified in Figure 4-1 will be implemented as necessary as determined by the Environmental Technician.

Traffic Management

Should unfledged least tern chicks be observed in the road or <50 feet of a section of the road without a barrier, the road should temporarily close; however, the Environmental Technician or NRO will have discretion to restart traffic under certain circumstances even if the chicks remain within 50 feet of the road (e.g., young chicks hiding in vegetation and not moving).

Should chicks be observed in the road where a barrier is in place, the Natural Resources staff may approach the chicks to herd them toward an area without a barrier so they may access suitable habitat.

Should chicks be observed within 50 yards of the Day Parking Area, the Natural Resources staff may approach the chicks to herd them away from the parking area.

Natural Resources staff members that observe or receive reports of unfledged least tern chicks near the road or parking area, or a change in the location of the impacted chicks will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information.

Monitoring

While least terns are considered precocial, they generally don't travel as great a distance from their nest area as plovers. Least tern chicks spend much of their time in vegetation or other cover and are fed by their parents, which can make them more difficult to count than piping plover chicks. Most of the counting and mapping of nest and chick locations will be conducted from a distance with binoculars and/or a spotting scope to minimize disturbance. In some cases, it may be necessary to enter nesting areas to confirm the presence of nests. Nest and chick locations will be sketched on a map similar to the one in Figure 4-2. The maps will include key landmarks to aid in recounting. Data collected will include date, time monitoring began and ended, personnel, whether each nest/chick was confirmed or inferred to be present and the basis of inference. The approximate age of all chicks directly observed will be estimated using the Least Tern Aging Key included in Appendix B.

In areas where a barrier is installed, a shorebird monitor will record the number of chicks, their approximate age and location a minimum of 2 times per day.

If a barrier is not installed to allow piping plover chicks to access foraging areas, monitoring will increase to reduce risks of chicks entering the roadway or parking area without adequate protective measures in place. Chick monitoring will increase to at least four times per day, and continuously during high traffic periods. Frequency of monitoring may be increased by the Environmental Technician or Natural Resources Officer if deemed necessary. Monitoring frequency will increase to a level determined in consultation with MADFW once chicks have been observed in the roadway or parking area.

In the event that inclement weather may adversely affect the chicks, monitoring frequency may be reduced and non-essential vehicle access will be restricted.

Monitoring chicks is difficult after sunset. To minimize the risk of take after dark, non-essential vehicle access will be restricted, however, essential vehicles may continue to travel through the area.

During the period when use of the road and/or parking lot is occurring, the number of active nests will be recounted 2 times per week while the covered activity is implemented, and the number of unfledged chicks will be counted daily to estimate the number of tern chicks exposed to this covered activity.

Monitoring will be carried out by a qualified shorebird monitor as described above in section 4.1.

Figure 4-3. Location of Potential Barrier in Relation to Nesting Areas Used by Least Terns at Plymouth Long Beach, 2011-2015

4.3 Monitoring Plan

Compliance & Effectiveness Monitoring

Compliance monitoring will document that impact minimization and mitigation measures associated with covered activities are implemented and that all requirements of the Habitat Conservation Plan for Piping Plover (HCP) are being met. The Town will continue to submit an annual Piping Plover Census Form and Tern Census Form to MADFW to document the total and index counts of piping plovers as well as the fate of each nest attempt and maps of nest locations. The Town will maintain a log of initiation dates for covered activities, number of pairs, broods, nests and chicks exposed, and locations, as well as monitoring frequency of breeding pairs and habitat. Chick numbers, chick locations, and daily maps showing the locations of the affected brood will be kept with the daily log. The Town will notify MADFW at least 24 hours in advance of initiation of any covered activity and when the covered activity ceases. The Town will maintain logs documenting timing and frequency of activities such as installation of symbolic fencing, monitoring of plover and tern activity, beach patrols, enforcement of bylaws and rules and regulations and timely implementation of temporary prohibitions on non-essential vehicle use. This will include detailed documentation of staff hours by day and time, for each employee, for all activities directly associated with covered activity implementation. A summary report will be submitted to MADFW on or before October 15 of each year. At minimum, the report will include dates of covered activities, estimated age of plover chicks in each brood or tern chicks in the sub-colony when covered activities were initiated, fledging success, number of chicks present on each date of implementation, estimated daily chick survival based on daily counts, observations of behavioral responses and movement patterns of the adults and chicks exposed to covered activities, dates of fledging and supporting documentation, if applicable, and any documented “take” of chicks resulting from the covered activities program.

Every week, a brief summary report will be submitted to MADFW. The report will include: (1) daily vehicle trip count for vehicles accessing Ryder Way at Manter’s Point and the OSV corridor at the Crossover; (2) quantification of changes to the barrier system associated with road/parking lot use; (3) for each affected brood, daily observations of plover chick numbers and behavior including a daily sketch map of the observed range of the brood on the beach; (4) daily observations of least tern chick numbers, approximate age and location; (5) weekly tally and description of any rules violations and enforcement actions taken; (6) weekly tally and description of all observations of plover broods crossing or approaching <50 feet from Ryder Way; (7) weekly tally and description of all observations of least tern chicks in an area without a barrier crossing or approaching <50 feet from Ryder Way; (8) any other notes, observations, or recommendations.

Any violations, incidents or accidents associated with road/parking lot use in vicinity of unfledged piping plover and least tern chicks, including take of a chick(s) shall be immediately reported to MADFW and USFWS staff. In the event of an alleged incident related to the use of roads and parking lots, the Director of Marine and Environmental Affairs, Environmental Technician or their designee in coordination with a shorebird monitor shall cooperate with and assist Town, State and Federal officials with the investigation of the incident. Depending on the nature of the incident, the Town of Plymouth, MADFW and USFWS reserve the right to suspend the covered activity for such time as they deem appropriate.

Part 5 - Budget

Implementation of the Plymouth Long Beach Management Plan is funded through a revolving fund. Beach operations for the 2016 season will be funded through the fiscal year 2016 and 2017 budgets. The budget for FY16 shown in Table 5-1 was authorized at the 2015 Spring Town Meeting, and the FY17 budget shown in Table 5-2 was authorized at the 2016 Spring Town Meeting.

The budgets for both FY16 and FY17 include funding for sufficient staffing to implement the IAMP, including seasonal staff consisting of 2 Natural Resources Officers, 3 Natural Resources Technicians and 12 Natural Resources Assistants. Under staffing levels required by the Plymouth Long Beach Management Plan, at least two qualified shorebird monitors, and sometimes as many as six depending on the day of the week and time of day, are on duty, which will allow monitoring for both the covered activity and routine management and monitoring. With current procedures, when unfledged chicks are present near Ryder Way, three staff members, including a qualified shorebird monitor, are dedicated to escorting essential vehicles through the area where unfledged chicks are present. Routine management and monitoring are conducted by the second shorebird monitor. Implementing this covered activity will allow these staff members to perform other duties, including those associated with this covered activity, so additional staff will not be necessary.

In addition, requested funds will be sufficient to purchase necessary materials such as silt fence and signage. Estimated costs include $500 for up to 10 rolls of 100' long silt fence and $100 for 20 sign blanks for the Department of Public Works Sign Shop to produce the necessary signs.

The costs for mitigation for FY16 will be paid through the Contingencies line item shown in Table 5-1. FY17 mitigation will be funded through the Management Opportunities and Contingencies line items as needed.

An increase in the fee for a Long Beach 4x4 Permit was requested to cover additional future costs. An incremental increase from $40 to $50 for FY17 and $55 for FY18 was approved by the Board of Selectmen on December 15, 2015.

Table 5-1. Fiscal Year 2016 Plymouth Long Beach Revolving Fund Budget Approved at 2015 Spring Town Meeting

Full Time Salaries		**$42,920.00**
MEA Director (20%)	$20,615.00	
Environmental Tech I (33%)	$22,305.00	
Benefits		**$10,811.00**
Police Patrols		**$18,000.00**
Seasonal Salaries		**$120,097.78**
Natural Resources Assistants (12)	$79,736.66	
Natural Resources Officers (2)	$20,240.00	
Natural Resources Technicians (3)	$20,121.12	
Equipment/Materials		**$21,800.00**
Educational Materials	$5,000.00	
Uniforms	$1,000.00	
Optical (Binoculars)	$300.00	
Fencing/Posts	$3,000.00	
Supplies (twine, tools, signs, etc.)	$4,500.00	
Fill	$8,000.00	
Contingencies		**$15,000.00**
Total Funding Request		**$228,700.00**

Table 5-2. Fiscal Year 2017 Plymouth Long Beach Revolving Fund Budget Approved at 2016 Spring Town Meeting

Full Time Salaries		**$44,783.00**
MEA Director (20%)	$21,552.00	
Environmental Tech I (33%)	$23,231.00	
Benefits		**$10,116.00**
Police Patrols		**$18,500.00**
Seasonal Salaries		**$135,538.42**
Natural Resources Assistants (12)	$82,546.35	
Natural Resources Officers (2)	$22,808.00	
Natural Resources Technicians (3)	$30,184.07	
Equipment/Materials		**$24,300.00**
Educational Materials	$1,000.00	
Uniforms	$1,000.00	
Optical (Binoculars)	$300.00	
Fencing/Posts	$3,000.00	
Supplies (twine, tools, signs, etc.)	$5,000.00	
Fill	$8,000.00	
Tide/Storm Monitoring	$2,500.00	
Management Opportunities	$3,500.00	
Contingencies		**$15,000.00**
Total Funding Request		**$248,300.00**

Part 6 – Mitigation Plan

To mitigate for the potential impacts of the covered activity on both piping plovers and least terns, the Town of Plymouth will contract with the U.S. Department of Agriculture—Wildlife Services (USDA-WS), or another qualified predator management expert, to conduct on-site selective predator management.

Predator management has been demonstrated to increase productivity at Plymouth Long Beach (see Section 1.2 and Table 1-1). Use of roads and parking lots in the vicinity of unfledged piping plover chicks requires mitigation to benefit 3 breeding pairs for every brood exposed to take. A minimum of 2 breeding pairs of least terns must benefit from mitigation activities for every nest exposed to take.

The number of breeding pairs of plovers and terns at Plymouth Long Beach varies each season. The level of selective predator management is based on the number of breeding pairs present during the previous season, but the actual number of pairs that benefit cannot be determined until after the breeding season. Any deficits in the required predator management will be offset by additional predator management during the following season.

2016 Mitigation

During the 2015 season, 17 pairs of plovers nested at Plymouth Long Beach. To benefit 3 breeding pairs, the Town of Plymouth must cover 18% of the costs of selective predator management at the site. During the 2015 season, 89 pairs of least terns nested at Plymouth Long Beach. Twenty-four of those pairs nested in areas that may be impacted by the covered activity. The Town will provide additional predator management during the 2017 season to offset any deficit.

USDA-WS was contracted to conduct selective predator management at Plymouth Long Beach for the 2016 season. USDA-WS recommended that $10,350 be budgeted for predator management for this season. The Town received a grant that would fully fund this work through the Bouchard Plover Restoration Projects grant provided by the U.S Fish and Wildlife Service, however, the Town contracted with USDA-WS to use Town funds for some of these services for two reasons: the timing of the grant award would not allow for early season work to occur, and to provide mitigation for covered activities during the 2016 season. Of the total budget, services in the amount of $8,872 will directly benefit piping plovers and least terns, which breaks down to $522 for each pair of breeding plovers and $100 for each pair of least terns based on the 2015 season (17 pairs and 89 pairs, respectively). The Town's contract with USDA-WS funds $3,200 of the predator management activities included in the scope of work for the Bouchard funds (Appendix C), which will benefit 6 pairs of plovers and 32 pairs of least terns based on the 2015 season. The number of pairs benefiting from predator management and total costs for predator management will be assessed at the end of the 2016 season and any deficits will be offset during the 2017 season.

The work plans provided to the Town for the 2016 season by USDA-WS and the U.S. Fish and Wildlife Service are included in Appendix C.

Mitigation Monitoring Plan

To assess effectiveness of the mitigation plan, the Town will monitor and report the following to MADFW annually: the actual number of plover broods and least tern nests and chicks exposed to covered activities, actual number of breeding pairs of piping plovers and least terns benefitting from

selective predator management, piping plover and least tern productivity for the site, causes of nest and/or chick loss, and any mitigation credits or deficits that will be carried over into the following season.

Literature Cited

Melvin, S.M. and J. P. Gibbs. 1996. Viability analysis for the Atlantic Coast population of Piping Plovers. Pages 175-186 In U.S. Fish and Wildlife Service. Piping Plover Atlantic Coast Population Revised Recovery Plan. U.S. Fish and Wildlife Service, Hadley, MA.

Appendices

A – Resumes of Responsible Staff

B – Least Tern Aging Key

C – Work Plan/Scope of Services for 2016 Predator Management

Appendix A – Resumes of Responsible Staff

David Gould

58 Myles Standish Drive
Carver, MA 02330
(508) 866-2023

EDUCATION

Master of Environmental Planning (May 1998), Arizona State University.
Concentration in Landscape Ecological Planning. Honors Graduate.

Bachelor of Arts (January 1993), Bridgewater State College (MA).
Dean's List (1991-1993). Phi Alpha Theta International Honor Society.

PROFESSIONAL EXPERIENCE

Director of Marine and Environmental Affairs, Town of Plymouth – October 2012 to present. Executive level management and oversight of Harbormaster Division, Natural Resources Division and Animal Control Division within Department. Responsible for operating budget, capital projects, equipment requests and grant awards. Oversees programs including shellfish, aquaculture, endangered species, river restoration and beach management plans.

Acting DPW Director Town of Plymouth– January 2007 to May 2007 and February 2009 to February 2010
Responsible for day-to-day operations, management, long-term planning for Public Works Department. Responsible for management and supervision of a staff of 120 full time employees. Responsible for planning, budgeting, directing and controlling of seven divisions, 400 miles of roadway and 103 square miles with a budget of $13 million dollars within the largest geographic community in the Commonwealth.

Environmental Manager – Town of Plymouth. Massachusetts 2004 - Present.
Provides technical, administrative and field expertise in managing environmental resources. Responsible for permit compliance, project development and oversight of diverse environmental programs ranging from coastal shorebird program, beach management, river restoration, watershed management and harbor development.

Natural Resources Officer - Town of Plymouth, Massachusetts 2001- 2004.
Provides technical, administrative and field expertise in managing coastal beaches, anadromous fish runs and other town properties. Responsible for the administration of coastal shorebird endangered species program. Supervises seasonal shorebird staff and volunteer herring wardens.

Conservation Agent - Hanson, Massachusetts. 1999-2001.
Provided professional support to the Conservation Commission in administering and enforcing the Massachusetts Wetlands Protection Act and the municipal wetlands protection by-law. Conducted site inspections, reviewed wetlands delineations and prepared site visit reports.

Assistant Conservation Agent - Wrentham, Massachusetts. 2000-2001.
Provided professional support to the Conservation Commission in administering and enforcing the Massachusetts Wetlands Protection Act and the municipal wetlands protection by-law.

Awards

- 2009 Boston/New York Chapter of American Institute of Architects: Urban Design Award for the Plymouth Public Space Action Plan
- 2007 NOAA Environmental Hero Award
- 2002 Coastal America Spirit Award for Town Brook Herring Run Restoration Project: Billington Street Dam Removal

Invited Speaker

2010 Urban River Restoration Conference
Water Environment Federation
Boston, MA
March 2010

Water Watch Series Workshop: Environmental Restoration
North South Rivers Watershed Association
Norwell, MA
February 2009

Demystifying Dam Removal Workshop
Massachusetts Dept. of Fish and Game – Division of Ecological Restoration
West Boylston, MA
November 2009

Local Planning Committee Member
2009 Restore America's Estuaries National Conference
Providence, RI
October 2008

Hands on Habitat – 10 Years of Coastal Restoration
National Oceanic and Atmospheric Administration
United States Capitol Building, HC-5
Washington, DC
June 2006

River Herring Restoration Workshop
Coalition for Buzzards Bay
Wareham, Massachusetts
February 2005

Coastal Stream Habitat Restoration Workshop
Waquoit Bay National Estuarrine Research Reserve
East Falmouth, Massachusetts
November 2004

Emerging Issues in Water Resources in the Northeast
Massachusetts Water Resources Research Center
University of Massachusetts – Amherst
October 2004

River Restoration Workshop
Tufts University
Medford, Massachusetts
October 2004

KERIN McCALL
Environmental Technician, Department of Marine & Environmental Affairs
Town of Plymouth, 11 Lincoln Street, Plymouth, MA 02360
(508)747-1620 x201 kmccall@townhall.plymouth.ma.us

EDUCATION

Bachelor of Science, Marine Science-Biology Concentration, August 1997.
Southampton College of Long Island University, Southampton, NY.
Dean's List 1993-1997, Honors Program, Merit Fellows Scholar, Beta Beta Beta Biological Society, Magna Cum Laude.

PROFESSIONAL EXPERIENCE

Town of Plymouth, Massachusetts
Environmental Technician I, 5/05 to present
Natural Resources Officer, 5/03-9/03 and 5/04-9/04
Implement the Plymouth Long Beach Management Plan, which was developed to minimize the impacts of off-road vehicle use and pedestrian activities on coastal waterbird nesting and wetland resources. Monitor nesting activity of coastal waterbirds, including Piping Plovers, Least Terns, Common Terns, Roseate Terns and Arctic Terns. Compile census and productivity data for each species. Educate the public through personal interaction, columns in the local paper, development of informational pamphlets, and maintenance of the Plymouth Long Beach page on the Town's website. Enforce regulations and bylaws concerning beach management and issue citations to gain compliance when necessary. Hire and supervise seasonal staff. Interact with and report to regulatory agencies to ensure compliance with the Plan and protection of nesting shorebirds and wetland resources.
Serve as Site Leader for Common Tern Monitoring Program in cooperation with the Massachusetts Division of Fisheries & Wildlife (2010 to present). Install monitoring plots, monitor nesting activity, band and weigh Common Tern chicks, supervise and train seasonal staff, analyze data. Enforce shellfish regulations.
Provided support for the solid waste and recycling program including environmental permitting and planning, interaction with recycling vendors, preparation of annual reports, represented the Town at meetings of regional organizations. (2005-2013)

Gulf Islands National Seashore, Gulf Breeze, Florida
Biological Science Technician, 3/00-9/00, 4/01-12/01, and 5/02-9/02
Student Conservation Associate, 5/99-3/00
Performed field work, data compilation and reporting for Natural Resources Management programs including monitoring of coastal waterbird nesting, shorebird monitoring program, monitoring of sea turtle nesting activity, satellite monitoring of sea turtle post-nesting migration routes, sea turtle and marine mammal stranding response, Gopher Tortoise habitat improvement and colony relocation, monitoring activity of Perdido Key Beach Mouse. Preparation, implementation and monitoring of urban-interface prescribed fire. Invasive plant removal. Injured and problematic/venomous animal response. Storm damage assessments and revegetation of dune areas. Trained new staff and volunteers. Interacted with the public, developed and distributed informational brochures on sea turtles, wrote articles for newsletters, interviews with press.

Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands.
Research Assistant, 6/98-10/98
Monitored nesting Hawksbill and Green sea turtles and foraging juvenile sea turtles, assisted with deployment of inter-nesting dataloggers and satellite transmitters for monitoring post-nesting migration, hurricane preparation and post-storm assessment, supervised and trained volunteers.

Culebra Leatherback Project. Isla de Culebra, Puerto Rico.
Field Technician, 4/98-6/98
Monitored nesting activity of Leatherback sea turtles. Supervised and educated groups of up to 15 visitors per night. Trained three new staff members to handle nesting sea turtles, use research equipment, and collect data.

Douglas Robinson Center for Marine Turtle Research. Ostional, Costa Rica.
Volunteer Research Assistant, 1/98-2/98
Monitored the nesting population of the Olive Ridley sea turtle, identified and tagged turtles with fibropapilloma for tumor monitoring, assisted with biopsy sampling of both fibropapilloma and normal tissue.

Coastal Research & Education Society of Long Island/Southampton College. Southampton, New York.
Lead Field Technician, 6/97-11/97
Acted as liaison with fishermen for a cooperative research program studying juvenile Green, Loggerhead, and Kemp's Ridley sea turtles in developmental habitat. Collected data on morphology, tagging, capture locations, and took blood samples. Compiled and analyzed 12 years of data.

Queensland Department of Environment. Townsville, Queensland, Australia.
Volunteer Research Assistant, 11/96-1/97
Collected data on the nesting populations of Green and Hawksbill sea turtles on Milman Island. Identified/collected species of reptiles, arachnids and insects at Milman Island for a Q. DoE project aimed at describing the flora and fauna of a typical islet of the northern Great Barrier Reef.
Student Intern, 9/96-11/96
Monitored Australian Brush-turkeys at Cape Pallarenda Environmental Park. Set up GIS, created datasheets, updated maps for digitization. Prepared honors thesis, submitted report to Q. DoE. Responded to local sea turtle strandings and assisted with field necropsies. Sighted turtles for rodeo capture on Green turtle feeding grounds.

CERTIFICATIONS

- PADI Open Water Diver SCUBA Certification, October, 1994.
- US Coast Guard Auxiliary Boating Skills and Seamanship Certification, 1996.
- S-130 Firefighter Training and S-190 Wildland Fire Behavior, August, 1999.
- Massachusetts Shellfish Constable Training Course, February, 2013.
- American Heart Association Certifications: Adult CPR, Child CPR, Infant CPR, AED, First Aid & Safety, May 2014.

Appendix B – Least Tern Aging Key

Least Tern Aging Key

Reformatted from key developed by Mass Audubon & MassWildlife

Age Class 1-5 days

About 2 Days Old

Tern chicks in Age Class 1-5 Days are distinguished by:

A. entirely downy

B. yellow coloration with brown spots

C. often will be found in or near the nest bowl

D. quite small in size compared to other ages and will be more difficult to find

Age Class 6-10 days

About 9 Days Old

Tern chicks in Age Class 6-10 Days are distinguished by:

A. coloration is still yellowish with brown mottles

B. feather development seen on the wings

C. at age 10 days, chick is about 1/2 the size of an adult

D. will be spending more time in vegetation

Age Class 11-15 days

About 11 Days Old

Tern chicks in Age Class 11-15 Days are distinguished by:

A. coloration on the top will change from yellow to brownish-gray mottle

B. primaries continue to develop & elongate

C. at age 15 days, chick is about 2/3 the size of an adult

D. majority of time will be spent in vegetation hiding

E. when running, will resemble a bowling pin, head will be erect

Least Tern Aging Key

Reformatted from key developed by Mass Audubon & MassWildlife

Age Class 16-20 days

About 18 Days Old

Tern chicks in Age Class 16-20 Days are distinguished by:

A. similar in size and shape to adult, but a bit smaller and not fully feathered

B. will be more visible and will spend more time near shoreline

C. cannot fly

Age Class 21+ days - Fledged

Fledged tern chicks are distinguished by:

A. similar in size and shape to an adult

B. forehead and top of head brownish gray

C. black markings around eyes and the back of the head

D. capable of sustained flight

E. may still be fed by an adult

Appendix C – Work Plan/Scope of Services for 2016 Predator Management

WS-ER (6-14)

Agreement No.: 25062
WBS Element:

COOPERATIVE SERVICE AGREEMENT
BETWEEN
THE TOWN OF PLYMOUTH, MA
AND THE
UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS)
WILDLIFE SERVICES (WS)

ARTICLE 1

The purpose of this agreement is to cooperate in a wildlife damage management project, as described in the Work Plan on the next page.

ARTICLE 2

APHIS WS has statutory authority under the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C.426-426b) as amended, and the Act of December 22, 1987 (101Stat. 1329-331, 7 U.S.C. 426c), to cooperate with States, local jurisdictions, individuals, public and private agencies, organizations, and institutions while conducting a program of wildlife services involving mammal and bird species that are reservoirs for zoonotic diseases, or animal species that are injurious and/or a nuisance to, among other things, agriculture, horticulture, forestry, animal husbandry, wildlife, and human health and safety.

ARTICLE 3

APHIS WS and the Town of Plymouth agree:

1. APHIS WS will provide the requested wildlife damage management services.
2. The Town of Plymouth will provide the U.S. Department of Agriculture the sum of $3,200.00 to cover the costs as outlined in the Financial Plan. Payment will be made by check **payable to "U.S. Department of Agriculture"** by a mutually agreed upon date.
3. The Town of Plymouth ensures and certifies that it is not currently debarred or suspended and is free of delinquent Federal debt.
4. The monies received by APHIS WS will be used for wildlife damage management activities.
5. Nothing in this agreement shall prevent APHIS WS from entering into separate agreements with any other organization or individual for the purpose of providing wildlife damage management services exclusive of those provided for under this agreement.
6. The Town of Plymouth certifies that APHIS WS has advised the Town of Plymouth that there may be private sector service providers available to provide wildlife management services that the Town of Plymouth is seeking from APHIS WS.
7. The performance of wildlife damage management actions by APHIS WS under this agreement is contingent upon a determination by APHIS WS that such actions are in compliance with the National Environmental Policy Act, Endangered Species Act, and any other applicable federal statutes. APHIS WS will not make a final decision to conduct requested wildlife damage management actions until it has made the determination of such compliance.

ARTICLE 4

Pursuant to Section 22, Title 41, United States Code, no member of or delegate to Congress shall be admitted to any share or part of this Agreement or to any benefit to arise therefrom.

ARTICLE 5

APHIS assumes no liability for any actions or activities conducted under this Cooperative Service Agreement except to the extent that recourse or remedies are provided by Congress under the Federal Tort Claims Act (FTCA), (28 U.S.C. 1346(b), 2401(b), and 2671-2680).

ARTICLE 6

The Agreement shall become effective February 11, 2016 and shall continue in effect until the completion or termination of the project. This Agreement may be amended or terminated at any time by mutual agreement of the parties in writing. Further, in the event the Town of Plymouth does not provide necessary funds, APHIS WS is relieved of the obligation to provide services under this agreement.

Tax Identification Number: 046001271

Town of Plymouth
11 Lincoln Street
Plymouth, MA 02360

2/9/16
Cooperator's Signature — Date

USDA-APHIS-Wildlife Service
463 West Street
Amherst, MA 01002

9 Feb 2016
State Director — Date

WORK PLAN

Wildlife Species: Red fox or other mammal species causing negative effects on shorebird reproduction.

Description of Damage: Predation of federally threatened piping plovers and other state threatened species and state species of special concern.

Location: Plymouth Long Beach, Plymouth, MA

Services Provided: WS will conduct up to four (4) control visits, day or night, to alleviate negative effects mammals are causing on shore bird reproduction using shooting and/or box traps.

FINANCIAL PLAN

Personnel Costs	$1,462.00
Travel	$300.00
Vehicle Fuel	$200.00
Supplies	$214.00
Equipment	$240.00
Services	$101.00
Subtotal (Direct Costs)	$2,517.00
Pooled Job Costs	$277.00
Indirect Costs	$406.00
TOTAL	$3,200.00

The distribution of the budget from this Financial Plan may vary as necessary to accomplish the purpose of this agreement, but may not exceed **$3,200.00**.

Financial Point of Contact

Town of Plymouth:	Kerin McCall Environmental Technician	(508) 747-1620 x201 Phone
APHIS, WS:	Dawn Wanczyk Budget Analyst	(413) 253-2403 x3 Phone

ATTACHMENT A
SCOPE OF SERVICES

Introduction

The U.S. Department of Agriculture (USDA) is authorized to protect American agriculture and other resources from damage associated with wildlife. The primary authority for Wildlife Services (WS) is the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C.426-426b) as amended, and the Act of December 22, 1987 (101Stat. 1329-331, 7 U.S.C. 426c). Wildlife Services activities are conducted in cooperation with other Federal, State and local agencies; private organizations and individuals.

The WS program uses an Integrated Wildlife Damage Management (IWDM) approach (sometimes referred to as IPM or "Integrated Pest Management") in which a series of methods may be used or recommended to reduce wildlife damage. IWDM is described in Chapter 1, 1-7 of the Animal Damage Control Program Final Environmental Impact Statement (USDA, 1994). These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. However, controlling wildlife damage may require that the offending animal(s) are killed or that the populations of the offending species be reduced.

Purpose

To conduct a wildlife damage management project that provides professional services to alleviate avian and mammalian predation and invasive species competition to nesting piping plovers and other shorebirds on beaches in Massachusetts and Rhode Island. The following beaches are included under this agreement:

- Monomoy NWR, Chatham, Massachusetts
- Parker River NWR (Plum Island and Thatcher's Island), Newburyport, Massachusetts
- Ninigret Conservation Area and Ninigret and Trustom Pond NWR, Charlestown, Rhode Island (and if permission is obtained, on nesting beaches owned or managed by RIDEM and privately owned properties)
- Plymouth Long Beach, Plymouth, MA
- Norton Point Barrier, Leland, Cape Poge and the Wasque Beaches (i.e., Chappaquddick), Martha's Vineyard, MA
- Crane Beach, Crane Estate, Ipswich, Massachusetts
- Nantucket, MA (including Coatue, Great Point, Coskata and the Haulover)
- Sandy Point, Ipswich, MA
- Horse Neck Beach, Westport, MA and Demarest Lloyd Beach, Dartmouth, MA
- West Island, Fairhaven, MA
- South Cape Beach State Reservation, Mashpee

This predator and invasive species reduction program will enable the landowners of nesting shorebird beaches to receive necessary operational support to efficiently and effectively reduce wildlife damage adversely impacting federally and state threatened and endangered bird species, or migratory birds of conservation concern and their nesting activities.

Planned USDA, APHIS, Wildlife Services Activities

WS program will provide wildlife damage management assistance to alleviate problems caused by avian

and mammalian predators and invasive species on the targeted beaches. The benefits expected from the WS program include WS expertise through evaluation and enhancement of existing damage management strategies; organizational support; and provision of additional predation management activities and equipment through operational assistance to the cooperator experiencing wildlife damage problems.

Conflict resolutions will be sought using an integrated approach. The determination of methods to alleviate damage will depend on considerations of selectivity, humaneness, human safety, effectiveness, practicability, and cost.

1) Damage Management Strategies: Operational work in authorized areas will be conducted using integrated nonlethal and lethal strategies. WS program personnel will direct operational work toward specific depredating individual animals or local populations by selecting the time, location, technique and specific application of management methods or tools in collaboration with the land managers.

2) Damage Management Methods and Techniques: The basic operational methods incorporated under this project for managing avian and mammalian predation and invasive species will include and be limited to: (1) placement and monitoring of live traps to include BMP approved foothold and box traps (if permitted), (2) assisting in the placement, and monitoring of exclosures and other exclusionary or predator scaring devices and equipment. (3) using night vision equipment, shooting with handguns and/or suppressed weapons for onsite euthanization, and (5) shooting with shotguns and nontoxic shot, (6) placement and monitoring Diaphacinone 50 toxicant within bait boxes for Norway rat control, and (7) using the avicide DRC-1339 in and around areas where depredation has occurred by avian predators.

Depending on the circumstances at any given time, the use of a particular method may have advantages and disadvantages. Therefore, these methods will be used in various combinations and degrees of intensity depending on local conditions and history of specific damage situations or other circumstances.

Resources Required

The WS State Director or immediate next line supervisor located in Amherst, Massachusetts will provide WS project direction. One primary WS personnel will be assigned the responsibility for conducting the wildlife damage management work at each location. One primary WS personnel will coordinate the organization and scheduling of additional assistance when cooperatively determined between WS and the land manager.

The total estimated cost for services to be provided by the WS for the 2016, 2017, and 2018 field seasons is $160,530.00. USFWS agrees to reimburse the WS Massachusetts program the total cost of this project. If the actual cost will exceed $160,530.00, then a signed modified agreement will be required by both parties.

The effort allocated for each beach is described below.

Monomoy NWR, Chatham, Massachusetts - $17,300
Landowner Contact: Kate Iaquinto (508) 945-0594 x13, kate_iaquinto@fws.gov
WS will deploy 1 to 2 Wildlife Biologist/Technicians (weather permitting) to the island on dates to be

determined collaboratively between Monomoy NWR and WS during the nesting season in 2016. A site for a tent will be made available on the island for WS staff on overnight work.
Effort is as follows: approximately 600 man-hours WS staff efforts (double time on Sundays and federal holidays) are covered under this agreement. All work is to be supplemented by another available funding source.

Parker River NWR, Newburyport, Massachusetts - $7,500
Landowner Contact: Nancy Pau (978) 465-5753, nancy_pau@fws.gov
WS will deploy 1 to 2 Wildlife Biologist/Technicians (or more if deemed necessary) for 1 to 4 day intervals to be determined collaboratively between Parker River NWR and WS prior to and during the nesting season in 2016. Parker River NWR staff may assist in predator control work and check traps set by WS personnel. Refuge housing may be available for WS staff if overnight work is required.

Effort is as follows: approximately 4 weeks of WS staff efforts (140 man-hours) is covered under this agreement.

Ninigret Conservation Area and Ninigret NWR, Charleston, Rhode Island - $45,000
Landowner Contact: Ryan Kleinert (401) 364-9124, ryan_kleinert@fws.gov
In 2016, 2017, and 2018 WS will deploy 1 to 2 Wildlife Biologist/Technicians (or more if deemed necessary) for 2 trapping sessions consisting of 3 to 4 consecutive trap nights between 1 February and 30 April. The exact dates of these sessions are to be determined collaboratively between Rhode Island NWR Complex and WS. Sites may include but are not necessarily limited to Ninigret CA/NWR, Trustom Pond NWR, East Beach Watch Hill, Quonochontaug Beach, and Napatree Point.
. Rhode Island NWR Complex staff may assist in predator control work with WS personnel. Refuge housing may be available for WS staff or a location for Wildlife Services to place a camper will be provided by Rhode Island NWR Complex. WS personnel may also opt to utilize approved lodging.

Yearly effort is as follows: approximately 3 weeks of WS staff efforts is covered under this agreement.

Plymouth Long Beach, Plymouth, MA - $10,350
Landowner Contact: Kerin McCall, 508-747-1620 x201
WS will deploy 1 to 2 Wildlife Biologist/Technicians (or more if deemed necessary) for 1 to 4 day intervals to be determined collaboratively between the Town of Plymouth and WS prior to and during the nesting seasons in 2016. The exact dates of these sessions are to be determined collaboratively between The Town of Plymouth and WS. WS will use firearms and/or cage traps to remove predator species that include, but may not be limited to, red fox, gray fox, Eastern coyote, raccoon, striped skunk, mink, and Virginia opossum. American crowand fish crow will be controlled by use of the avian toxicant DRC-1339. If present, Black-Crowned Night-Heron will be removed. Activities will be conducted on lands owned and managed by the Town of Plymouth and on private property where written authorization of the property owner may be obtained.

Norton Point, Leland Beach and Chappaquiddick, Martha's Vineyard, MA - $16,000
Landowner Contact: Russell Hopping, (978) 840-4446 x1927, rhopping@ttor

The basic operational methods incorporated under this project for managing striped skunk, American crow and raccoon predation will include and be limited to: (1) placement and monitoring of live traps, (2) dispatching trapped skunks, American crow and raccoons with suppressed weapons and or euthanizing by AVMA approved methods, (3) the use of DRC – 1339 COR for removal of American crows.

WS will deploy 1 to 2 Wildlife Biologist/Technicians for 1 to 4 day intervals to be determined collaboratively between The Trustees of Reservations and WS prior to and during the nesting season in 2016 and 2017. Trapping sessions are to be determined by The Trustees of Reservations and WS before nesting season. No housing is available for WS staff.

Yearly effort is as follows: the budget for this agreement is for up to 2 WS trips to Martha's Vineyard, for a maximum total of up to 7 work days/nights.

Crane Beach, Estate, Ipswich, Massachusetts- $5,750
Landowner Contact: Russell Hopping, (**978) 840-4446 x1927, rhopping@ttor.org**

WS will implement management of American crow predation of piping plovers through the application of DRC1339 in mock piping plover exclosures and if necessary, management of gulls, great horned owls, black-crowned night herons and other predator species preying on and/or disturbing the nesting of piping plover and least terns through an integrated program utilizing toxicants and other methods deemed appropriate by Wildlife Services, The Trustees of the Reservation, and the Massachusetts Division of Fisheries and Wildlife under appropriate state and federal laws and applicable permits.

This agreement shall include funding for a total of up to 4 visits in 2016 from Wildlife Services staff, 3 for application and 1 for final retrieval of unconsumed DRC-1339 treated eggs per label requirements. Additional control activities may be conducted in association with these visits if requested by The Trustees in advance with available funding. If The Trustees are contacted by the media or a member of the public, the Trustees may, at their discretion, forward any or all of these calls to the WS Amherst office so information about the program can be distributed accordingly.

Nantucket, MA (including Coatue, Great Point, Coskata and the Haulover) - $21,100
Landowner Contact: Russell Hopping, (**978) 840-4446 x1927, rhopping@ttor.org**

WS will implement management of Norway rat predation of piping plovers through (1) placement and monitoring Diaphacinone 50 toxicant within bait boxes, and (2) monitor game cameras for the presence of Norway rats on the beaches. WS will implement management of American crow predation of piping plovers through1) monitoring game cameras for the presence of American crows and (2) placement of DRC-1339 injected eggs on beaches with or without mock exclosures. WS will also monitor feral cats on the beaches (if presence of feral cats is substantial and a threat to piping plover reproduction on the beach in 2016 and 2017, WS will implement strategies for this species to relieve predation .

WS will deploy 1 to 2 Wildlife Biologist/Technicians for up to seven trips to Nantucket to be determined collaboratively between Trustees of Reservations and WS prior to and during the nesting season (February to July) in 2016 and 2017. Baiting sessions (Norway rat and American crow toxicant) are to be determined by the Trustees of Reservations and WS before nesting season but are to be conducted at seven day intervals. Trapping sessions are to be determined by the Trustees of Reservations and WS before the nesting season.

Yearly effort is as follows: the budget for this agreement is for up to 6 WS trips to Nantucket, for a maximum total of up to 7 work days/nights. Man hours for this project are based on 10-12 hour days with one trip involving 2 WS employees staying for a 2 day period on Nantucket (up to 100 man hours for the total of the project).

MA DCR Properties - $20,850 (2016) and $16,680 (2017)
Sandy Point, Ipswich, MA
Horse Neck Beach, Westport, MA and Demarest Lloyd Beach, Dartmouth, MA
West Island, Fairhaven, MA
South Cape Beach State Reservation, Mashpee Landowner Contact: Jorge Ayub, (617) 626-1434, jorge.ayub@state.ma.us

WS program will provide wildlife damage management assistance to alleviate problems caused by avian and mammalian predators on MA DCR properties at their request. The basic operational methods incorporated under this project for managing avian and mammal predation will include and be limited to: (1) shooting with suppressed fire arms and night vision equipment, (2) shooting with shotguns and nontoxic shot, (3) placement and monitoring of live traps and (4) using the avicide DRC-1339 in and around areas where depredation has occurred by avian predators.

The estimated cost for services to be provided by the WS Massachusetts Program for the 2016 field season on MA DCR properties is $20,850 and the estimated cost for services for the 2017 field season is $16,680 (no funds are available for management activities on Sandy Point in 2017). WS will deploy 1 to 2 Wildlife Biologist/ Technicians for 1 to 2 day intervals to be determined collaboratively between the MA DCR and WS prior to and during the nesting season in 2016 and 2017.

Yearly effort is as follows: the budget for this agreement is for up to 25 control visits to MA DCR properties/year (average 5 control visits/site/year) to address mammalian and avian predation.

Stipulations and Restrictions

WS shall obtain concurrence from all associated landowners (USFWS, Town of Plymouth, The Trustees of Reservations and the Massachusetts Department of Conservation and Recreation) prior to implementing activities identified in the work plan. WS shall coordinate with each Landowner contact regarding the administration of activities conducted pursuant to this Agreement. Specifically, WS shall discuss control activities with the landowners prior to implementation and contact the landowners 24-48 hours prior to implementing control services. WS will be considered an invitee on the lands controlled by the landowner. WS shall meet with affected landowners as determined necessary by either party to discuss mutual program interests, accomplishments, needs, technology, and procedures.

WS will conduct its activities in accordance with its established operating policies and with the laws, regulations, and ordinances of the United States, the Commonwealth of Massachusetts, the State of Rhode Island, if applicable, and other concerned government agencies. All WS operations shall be under the direct supervision of WS. WS is required to confirm that all Landowners have obtained all required federal and state depredation permits for the activities covered under this agreement prior to implementation.

With permission from USFWS, the WS and the landowners may mutually agree in writing, at any time during the term of this Agreement, to amend, modify, add or delete services from the Work Plan.

The obligations of both Parties herein are subject to the availability of funding, and nothing contained herein shall be construed as binding either Party to expend in any one fiscal year any sum in excess of available private dollars, State or congressional appropriations, or to involve either Party in any contract

or other obligation for further expenditure of money in excess of such appropriations or private allocations.

Effective Dates

The interagency agreement shall become effective on the date of final signature and shall expire on March 31, 2019.

ATTACHMENT B
FINANCIAL PLAN

The total budget for this agreement is $160,530.00, as itemized below. The funding allocated to each individual project may not exceed the amounts identified below, unless amended.

Monomoy NWR, Chatham, Massachusetts - $17,300

Personnel Costs	$8,200.00
Travel	$2,092.00
Vehicle Fuel	$800.00
Supplies	$900.00
Equipment	$1,070.00
Services	$544.00
Subtotal (Direct Costs)	$13,606.00
Pooled Job Costs	$1,497.00
Indirect Costs	$2,197.00
Total cost for 2016	$17,300.00

Housing may be available from the refuge**.**

Parker River NWR, Newburyport, Massachusetts - $7,500

Personnel Costs	$3,841.00
Travel	$621.00
Vehicle Fuel	$400.00
Supplies	$500.00
Equipment	$300.00
Services	$236.00
Subtotal (Direct Costs)	$5,898.00
Pooled Job Costs	$649.00
Indirect Costs	$953.00
Total for 2016	$7,500.00

Housing may be available from the refuge.

Ninigret NWR, Charleston, Rhode Island - $45,000

Personnel Costs	$7,725.00
Travel	$1,200.00
Vehicle Fuel	$800.00
Supplies	$800.00
Equipment	$800.00

Services $472.00
Subtotal (Direct Costs) $11,797.00

Pooled Job Costs $1,298.00
Indirect Costs $1,905.00

Total for 2016 ..... $15,000.00

Personnel Costs $7,725.00
Travel $1,200.00
Vehicle Fuel $800.00
Supplies $800.00
Equipment $800.00
Services $472.00
Subtotal (Direct Costs) $11,797.00

Pooled Job Costs $1,298.00
Indirect Costs $1,905.00

Total for 2017 ..... $15,000.00

Personnel Costs $7,725.00
Travel $1,200.00
Vehicle Fuel $800.00
Supplies $800.00
Equipment $800.00
Services $472.00
Subtotal (Direct Costs) $11,797.00

Pooled Job Costs $1,298.00
Indirect Costs $1,905.00

Total for 2018 ..... $15,000.00

Total 3 year cost $45,000.00

Housing may be available from the refuge.

Plymouth Long Beach, Plymouth, MA - $10,350

Personnel Costs $5,500.00
Travel $600.00
Vehicle Fuel $600.00
Supplies $615.00
Equipment $500.00
Services $325.00
Subtotal (Direct Costs) $8,140.00

Pooled Job Costs..... $895.00
Indirect Costs……$1,315.00

Total for 2016……...$10,350.00

Norton Point Barrier, Leland Beach and Chappaquiddick, Martha's Vineyard, MA - $16,000

Personnel Costs…….$3,295.00
Travel..... $1,200.00
Vehicle Fuel..... $500.00
Supplies……$500.00
Equipment..... $545.00
Services..... $252.00
Subtotal (Direct Costs)..... $6,292.00

Pooled Job Costs……...$692.00
Indirect Costs…….$1,016.00

Total for 2016……$8,000.00

Personnel Costs…….$3,295.00
Travel..... $1,200.00
Vehicle Fuel..... $500.00
Supplies..... $500.00
Equipment..... $545.00
Services..... $252.00
Subtotal (Direct Costs)..... $6,292.00

Pooled Job Cost……....$692.00
Indirect Costs…….$1,016.00

Total for 2017……$8,000.00

Total two year cost……..$16,000,00

Crane Beach, Crane Estate, Ipswich, Massachusetts - $5,750

Personnel Costs…… .$3,200.00
Travel …….....$400.00
Vehicle fuel……$300.00
Supplies ……..……...$550.00
Equipment……..$500.00
Services……...$181.00
Subtotal……$4,522.00

Pooled Job Cost……...$497.00
Indirect Costs……...$730.00
Total for 2016……..……..$5,750.00

Nantucket, MA (including Coatue, Great Point, Coskata and the Haulover) - $21,100

Personnel Costs	$3,715.00
Travel	$1,750.00
Vehicle Fuel	$700.00
Supplies	$1000.00
Equipment	$800.00
Services	$332.00
Subtotal (Direct Costs)	$8,297.00
Pooled Job Costs	$913.00
Indirect Costs	$1,340.00
Total for 2016	$10,550.00
Personnel Costs	$3,715.00
Travel	$1,750.00
Vehicle Fuel	$700.00
Supplies	$1000.00
Equipment	$800.00
Services	$332.00
Subtotal (Direct Costs)	$8,297.00
Pooled Job Costs	$913.00
Indirect Costs	$1,340.00
Total for 2017	$10,550.00
Total two year cost	**$21,100.00**

MA DCR Properties - $37,530
Sandy Point, Ipswich, MA (only in 2016)
Horse Neck Beach, Westport, MA
Demarest Lloyd Beach, Dartmouth, MA
West Island, Fairhaven, MA
South Cape State Beach, Mashpee, MA

Personnel Costs	$11,842.00
Travel	$1,200.00
Vehicle Fuel	$900.00
Supplies	$1000.00
Equipment	$800.00
Services	$656.00
Subtotal (Direct Costs)	$16,398.00

Pooled Job Costs	$1,804.00
Indirect Costs	$2,648.00
Total for 2016	$20,850.00
Personnel Costs	$9,494.00
Travel	$1,000.00
Vehicle Fuel	$700.00
Supplies	$750.00
Equipment	$650.00
Services	$524.00
Subtotal (Direct Costs)	$13,118.00
Pooled Job Costs	$1,443.00
Indirect Costs	$2,119.00
Total for 2017	$16,680.00
Total two year cost	**$37,530.00**

GRAND TOTAL……$160,530.00

Financial Point of Contact

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